

# Data Analysis Algorithm Suitable for Structural Health Monitoring Based on Dust Network, Phase II

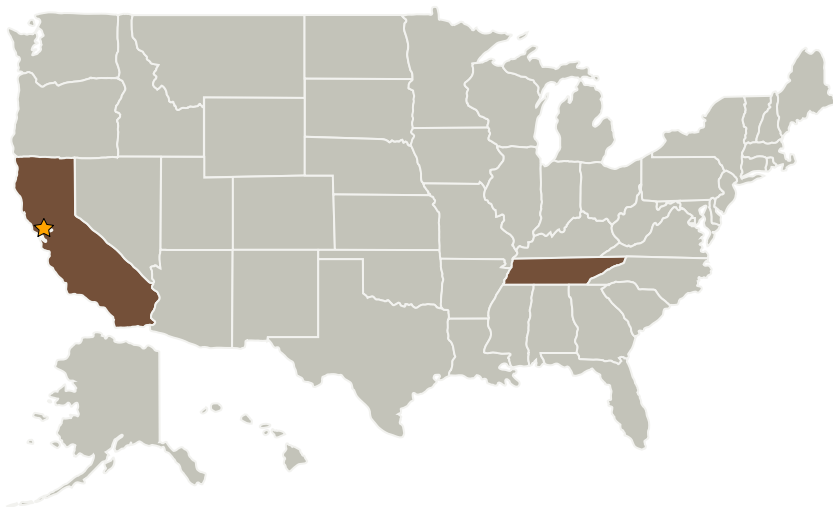
Completed Technology Project (2005 - 2007)



## Project Introduction

This proposed project will attempt to develop a data analysis system for structural health monitoring on space structures. The data analysis software will be a key component in space vehicle health management system and can be used to in vehicle life prediction. The sensor data analysis algorithm is aimed at providing a modeling and simulation tool for data collected from a network of distributed sensors. The sensor network can be implemented via the state-of-the-art technology of distributed wireless dust network. A novel algorithm combining measurement data from the sensors and the analytical model based on the concept of finite element analysis is proposed and the feasibility of the algorithm to detect structural damage will be tested in this project. The project focuses on integrating the new mesh sensor network technology into structural health monitoring. The data analysis system can monitor the performance of defective structural component in a space vehicle and issue proper warning for maintenance and repair. The concept has been tested feasible in Phase I. During Phase II, the algorithm will be further developed into a commercial software to be used for the structural integrity monitoring of many engineering applications.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Ames Research Center (ARC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Brilliant Technology, Inc.	Supporting Organization	Industry	Brentwood, Tennessee

## Primary U.S. Work Locations

California	Tennessee
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.2 Structures
    - └ TX12.2.3 Reliability and Sustainment